SW

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/754,618	01/04/2001	Rainer Pflug	PFLUG	4677

7590 10/31/2003

Henry M. Feiereisen
Henry M. Feiereisen, LLC
Suite 3220
350 Fifth Avenue
New York, NY 10118

EXAMINER	
SY, MARIANO ONG	

ART UNIT	PAPER NUMBER
3683	

DATE MAILED: 10/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

SW

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 14

Application Number: 09/754,618
Filing Date: January 04, 2001
Appellant(s): PFLUG ET AL.

Ursula B. Day
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed September 4, 2003.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The brief does not contain a statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief. Therefore, it is presumed that there are none. The Board, however, may exercise its discretion to require an explicit statement as to the existence of any related appeals and interferences.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 1 and 7 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

5,921,684	Niina	7-1999

6,203,634	Volkmuth	3-2001
6,062,736	Zernickel	5-2000

Technical Book, Ball and Roller Bearings, Punblisher John Wiley & Sons, Third Edition, pp. 38-41

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

1. Claims 1-3 and 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niina (U.S. Patent Number 5,921,684) in view of Volkmuth (U.S. Patent Number 6,203,634 B1) and "Technical book, Ball and Roller Bearings, publisher John Wiley & Sons, third Edition, pp. 38-41".

Re-claim 1 Niina discloses, as shown in fig. 5, a thrust ball bearing 14 comprising first 14a and second 14b circular ring shaped bearing disks moving eccentrically to one another, and bearing balls 14c for rolling along circular tracks 11a, 13a. However Niina fails to disclose said first and second bearing disks made from a through-hardenable ferrous material. Volkmuth teaches the use of through hardened rolling bearing components which include rings, balls, washers, and generally all parts of a rolling bearing made of through hardened bearing steel, see col. 5, lines 65-67 and col. 6, lines 1-6. Technical book, Ball and Roller Bearings, publisher John Wiley & Sons, third Edition, pp. 38-41 teaches the use of through-hardening rolling bearing components. It would have been obvious to one of ordinary skill in the art to have merely utilized the well-known through-hardening bearing steel for use on bearing disks of Niina, in view of

the teachings of Volkmuth and the Technical book, in order to withstand heavier loads and extend the usage and life of the bearing.

Re-claims 2, 3, 8, and 9 Niina was silent to show wherein the bearing disk are made of unalloyed, low-alloy or high-alloy ferrous material and made of a steel selected from the group consisting of C 45, C 55, C67, C 75. Technical book, Ball and Roller Bearings teaches bearing disks made of unalloyed, low-alloy or high-alloy ferrous material and made of a steel selected from the group consisting of C 45, C 55, C67, C 75. It would have been obvious to one of ordinary skill in the art to have use the wide array of alloy material to be used in the bearing disks of Niina, in view of the teaching of Technical book, Ball and Roller Bearings, depending upon the size, load, and environment being applied.

Re-claim 6 Niina discloses, as shown in figure 5, thrust ball bearing for use in a scroll compressor having a housing 13, a revolving scroll member 11 mounted on a crank pin of a shaft 15a, a stationary scroll member 12, said first bearing disk connected with the revolving scroll member and said second bearing disk securely fixed to the housing, whereby a compressor space P is formed during interaction of the revolving and the stationary scroll member.

Re-claim 7, Niina discloses, as shown in fig. 5, a scroll compressor comprising: a housing 13, a stationary scroll member 12, a revolving scroll member 11, a compression space P, a thrust ball bearing 14 having a first bearing disk 14a, a second bearing disk 14b, and bearing balls 14c. However Niina fails to disclose said first and second bearing disks made from a through-hardenable ferrous material. Volkmuth teaches the use of

through hardened rolling bearing components which include rings, balls, washers, and generally all parts of a rolling bearing made of through hardened bearing steel, see col. 5, lines 65-67 and col. 6, lines 1-6. Technical book, Ball and Roller Bearings, publisher John Wiley & Sons, third Edition, pp. 38-41 teaches the use of through-hardening rolling bearing components. It would have been obvious to one of ordinary skill in the art to have merely utilized the well-known through-hardening bearing steel for use on bearing disks of Niina, in view of the teachings of Volkmuth and the Technical book, in order to withstand heavier loads and extend the usage and life of the bearing.

2. Claims 4, 5, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niina (U.S. Patent Number 5,921,684) in view of Volkmuth (U.S. Patent Number 6,203,634 B1) and "Technical book, Ball and Roller Bearings, publisher John Wiley & Sons, third Edition, pp. 38-41" in further view of Zernickel (U.S. Patent Number 6,062,736).

Re-claims 4, 5, 10, and 11 Niina as modified discloses wherein the bearing disks are produced through press work, see col. 1 lines 49-53. However Niina as modified was silent to show wherein the bearing disks are made by a non-cutting shaping process. Zernickel teaches radial rolling bearing is made by a non-chipping shaping procedure. It would have been obvious to one of ordinary skill in the art to have utilized the known shaping procedure with a shaping speed of <2 m/min on the bearing disks of Niina as modified, in view of the teaching of Zernickel, wherein the use of a suitable shaping speed depending upon the size of the bearing disks and the type of material used in order to form a smooth raceway surface.

(11) Response to Argument

On page 7, lines 13-16 of Brief of Appeal recites "However, Volkmuth does not disclose through-hardenable components of the type as in the present invention, nor does it point into the direction of using through-hardenable steel for use in thrust bearings for a scroll compressor." and lines 18-20 recites "Appellants do claim thrust bearing disks for scroll compressors. Thus, the Volkmuth reference has no disclosure on the subject matter as set forth in claim 1". This is in conflict with independent claim 1 which does not claim a scroll compressor.

On pages 7 and 8, appellant is separately arguing the references. The rejection of the claims are based on a combination of references. Namely Niina '684, who discloses a thrust bearing (fig. 5) having a first and second (14a,14b) ring-shaped disks with bearing balls (14c) arranged between the disks. Niina is concerned with preventing the flaking of the rolling contact surfaces, i.e., the first and second ring-shaped disks (col. 2, lines 26-34), in order to improve the rolling contact life of the disks. Niina does this by heat treating the disks to a certain depth to improve the resistance of the disks to cracking and flaking (col. 2, lines 52-57). Niina even states that the heattreating can be performed at any depth from the raceway surface (col. 2, line 29).

Since Niina hasn't specifically stated that the first and second bearing disk are made from a through-hardenable ferrous material (assuming that appellant means of a ferrous material through-hardened completely through the material).

The examiner has applied two teaching references, Volkmuth '634 and the Technical Book, as evidence that it is old and well known to make bearings and their components out of through-hardened bearing steel.

Volkmuth '634 discloses in col. 5, last paragraph, that "through hardened rolling bearing components. These components include rings, rollers, balls, washers and generally all parts of a rolling bearing made of through hardened bearing steel".

Thus it is clear from Volkmuth '634 that one of ordinary skill in the art would have made a rolling bearing component, which encompasses thrust rolling bearing from through hardened steel to increase the useful life of the bearing.

The examiner cites the Technical Book as further evidence that "most rings and rolling elements" are made from through-hardened bearing steels. Again making it very clear, from the references, that it would have been obvious to make the first and second bearing disks from through-hardenable ferrous material to improve the useful life of the thrust bearing. The examiner has not used hindsight or used the applicants specification as a blueprint to make the thrust bearing disks from through-hardenable ferrous material.

The appellant argues on page 9, second paragraph, that there is no thread of motivation to combine these references and no details as to such motivation was discussed by the examiner. The examiner takes issue with this statement. Throughout all of the references, the motivation is to improve the useful life of the bearings by making the components out of harder material, i.e., through-hardened bearing steel subjected a heat treatment to further increase the toughness of the material. The

examiner, throughout the prosecution history has discussed the motivation to combine these references. In the first office action, paper No. 3, page 4, first and second paragraphs. In paper No. 5, page 3, first paragraph; page 4, second paragraph; page 5, first paragraph. In paper No. 8, page 2, first and second paragraphs. In paper No. 11, page 3, first and second paragraphs; and page 6, first paragraph.

The appellant on page 11 of the Brief of Appeal argues that the Technical Book does not disclose bearing disks made of a material defined in claims 2, 3, 8, and 9. The appellant is arguing the reference separately. Clearly, the Technical Book discloses making rings and rolling elements out of the material claimed in claims 2, 3, 8, and 9. The rejection is not a 102 rejection based on the Technical Book reference. Rather it is a 103 combination rejection based on Niina, Volkmuth and the Technical Book. Clearly, one of ordinary skill in the art would have been motivated, solely by the references, to make the thrust bearing disks from the material disclosed in the Technical Book.

On page 12, last paragraph of the Brief of Appeal, Appellant argues that Zernickel '736 does not even refer to a non-cutting shaping process, but only to a non-chipping process. Zernickel '736 discloses in col. 2, lines 21-22, a non-chipping shaping procedure, which is different from a non-chipping process as stated by the appellant. Non-chipping shaping procedures do not use metal cutting tools and no metal is cut or chipped or removed to shape or form a product.

Appellant further argues that the shaping process referred to has nothing to do with and is unsuitable for the thrust bearing structures as claimed in claim 4. Moreover, Zernickel is completely silent as to any shaping speed.

According to Merriam-Webster's Collegiate Dictionary, chipping means to cut or hew with an edged tool, and according to a known art Harpaz et al. (U.S. Patent Number 5,346,335) col. 1, lines 28-32, use of metal cutting tools for metal cutting operations of the kind indicated above resides in the effective and safe removal of the metal cutting chips formed during the cutting operation. In manufacturing and machining operations, non-cutting shaping procedures do not use metal cutting tools to shape or form a product, e.g., on the circular groove of the bearing disk. In a non-chipping shaping procedures no metal is cut or chipped to shape or form the product, e.g., the circular groove of the bearing disk. Therefore no cutting tools are used, no metal is removed to shape the circular groove on the bearing disk, and the circular groove on the bearing disk is done only by non-cutting or non-chipping shaping procedure.

Zernickel was silent as to any shaping speed. The choice of shaping speed for a non-cutting or non-chipping shaping procedure in manufacturing of bearing disks depend upon the kind of precision the bearing is used for specific type of application. One of ordinary skill in the art would have merely utilized a suitable shaping speed, which determines the smoothness of the surface or grade of surface finish, in the process of making the bearing in order to extend the usage and life of the bearing depending upon the type of application and cost.

Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is

unpatentable even though the prior product was made by a different process. Clearly, the product disclosed in the combination meets all the structure limitations defined in the product-by-process claims 4, 5, 10, and 11.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

M. Sy
October 28, 2003

JACK LAVINDER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600

Conferees
J.L.
T.H.
M.S.

Henry M. Feiereisen
Henry M. Feiereisen, LLC
Suite 3220
350 Fifth Avenue
New York, NY 10118